

**III. Remarks**

Claims 1-32 are in the application and stand rejected. Claims 1, 9, 16, 18, and 32 have been amended.

**Claim Rejections -35 USC § 102**

Claims 1, 2, 6 and 8 stand rejected under 35 U.S.C. 102(b) as being anticipated by Kuehnle (U.S. Pat. 3,884,787). Kuehnle teach, in Fig. 2, a reel 68 representing an elongated substrate member 70 which is to be coated within the vessel 52 (Column 8 lines 25-27). Kuehnle discloses a rotating cylindrical drum of circular cross section on which the substrate is wound in a helical path as the means to move the substrate. At column 4, lines 61 – 65 Kuehnle states: "The substrate member is flexible and is wrapped around the drum so that in the process of rotating the drum the substrate member will be advanced at a rapid rate along the tortuous path established by the configuration of the drum". The circularity of Kuehnle's cylinder is required because, as recognized by the examiner in the office action, the drum, connected by shaft 60 to motor 64 [Fig. 2], **rotates**.

Further, as stated by the examiner, "In FIG. 2 a **cylindrical** drum is illustrated at 58 by means of dashed lines, the drum being connected to a shaft 60 ..." highlighting that Kuehnle's drum is a cylinder of circular cross section - as it must be for uniform coating to occur.

There is a significant difference between applicants' claims and the disclosure of Kuehnle. In applicants process the cooling block is **not circular in cross section** and does **not rotate**.

At page 10, second full paragraph of applicants' specification, the text states "The cooling block 142 is shaped similar to a racetrack ...", in other words, it is an oval, slightly curved on a long dimension and sharply curved on a short dimension. Applicant's figures 1-3 and, in particular, figure 2 demonstrate clearly that the cooling block is not circular in cross section.

In applicants process, the payout spool 118 and the take-up spool 120 are elements of a reel-to-reel tape transport system that may further include motors (not shown) and a controller (not shown) that govern the translation of the tape 134 through the consecutive deposition system 100. In other words, the cooling block is stationary and the tape moves by means of a motorized reel to reel transport system.

A cooling block having the shape of applicants' cooling block, or for that matter, any shape other than a circular cylindrical shape, would not function in Kuehnle's process because a drum that was not perfectly round would present the tape to be coated at different distances from the target depending on where in the rotation the revolving drum was at any particular point in time and therefore would deposit a varying amount of material on the revolving tape.

Applicants' process uses a cooling block that is not cylindrical, thus providing an extended period in the deposition zone and yet maintains the moving tape at a constant distance from the deposition source. And, unlike Kuehnle, applicants' process uses a stationary cooling block.

For the foregoing two reasons, applicants respectfully request favorable reconsideration of this ground for rejection.

### **Claim Rejections -35 USC § 103**

Claims 1-4, 6, 8, 16, 17 and 32 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Kuehnle (U.S. Pat. 3,884,787) in view of Saida [sic] et al. (U.S. Pat. 4,763,601).

Kuehnle is discussed above and as indicated above is inapposite. It does not render applicants' process obvious because it lacks the two essential characteristics of applicants process; an elongated side of a cooling block allowing extended time in a coating zone and a stationary structure around which a tape moves.

In addition, Kuehnle does not teach a deposition chamber comprising a deposition zone and one coating modification zone.

Zhang et al. is cited as teaching a deposition chamber comprising a deposition zone and one coating modification zone. However, Kuehnle and Zhang et al., taken together, still do not teach a tape traversing the deposition chamber around an oval stationary cooling block

Therefore, if one of ordinary skill in the art at the time the invention was made modified Kuehnle by utilizing a metal substrate, utilizing a coating that is a biaxially-textured buffer layer for a

high temperature superconducting material, and utilizing a deposition chamber comprising a deposition zone and one coating modification zone as taught by Zhang et al. that skilled person would not arrive at applicants process.

Thus, applicants' process would not be obvious to one combining Kuehnle and Zhang et al. and applicants' respectfully request favorable reconsideration of this ground for rejection

Claim 5 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Kuehnle in view of Zhang et al. as applied to claims 1-4, 6, 8, 16 and 17 above, and further in view of Mario et al. (U.S. Pat. 4,562,093).

Kuehnle is discussed above and as indicated above is inapposite. It does not render applicants' process obvious because it lacks the two essential characteristics of applicants process, an elongated side of a cooling block allowing extended time in a coating zone and a stationary structure around which a tape moves.

Mario et al. is cited as teaching teach shutters to control range of deposition from the sputter target. (Column 9 lines 1-11. What Mario et al. shows is the use of a shutter in the production of a glass pane having a band filter of adjustable size along one or more margin edges.

However, Kuehnle, Zhang et al., and Mario et al., taken together, still do not teach a tape traversing the deposition chamber around an oval stationary cooling block

Thus, applicants' process would not be obvious to one combining Kuehnle, Zhang et al. and Mario et al. and applicants' respectfully request favorable reconsideration of this ground for rejection.

Claim 7 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Kuehnle in view of Zhang et al. as applied to claims 1-4, 6, 8,16 and 17 above, and further in view of Kuehnle (U.S. Pat. 3,829,373).

Kuehnle is discussed above and as indicated above is inapposite. It does not render applicants' process obvious because it lacks the two essential characteristics of applicants process, an elongated side of a cooling block allowing extended time in a coating zone and a stationary structure around which a tape moves.

Kuehnle '973 is cited as teaching that different targets can be utilized to deposit different materials by utilizing different bars of materials. (Column 7 lines 46-50)

As is clearly seen from Kuehnle '973's fig. 14, the drum is circular and is rotating and Kuehnle, Zhang et al., and Kuehnle '973., taken together, still do not teach a tape traversing the deposition chamber around an ovoid stationary cooling block

Thus, applicants' process would not be obvious to one combining Kuehnle, Zhang et al. and Kuehnle. and applicants' respectfully request favorable reconsideration of this ground for rejection.

Claims 9-13 and 15 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Kuehnle (U.S. Pat. 3,884,787) in view of Saida et al. (U.S. Pat. 4,763,601).

Kuehnle is discussed above and as indicated above is inapposite. It does not render applicants' process obvious because it lacks the two essential characteristics of applicants process, an elongated side of a cooling block allowing extended time in a coating zone and a stationary structure around which a tape moves.

The differences between Kuehnle and the present claims is utilizing a second deposition chamber, utilizing a T-tube, the dimensions of the T-tube, the second chamber being sputtering, and the sputtering being RF magnetron sputtering.

Kuehnle recognize that his chamber can be part of a continuous production line extending over a much greater space than shown with a suitable guiding and other processing means. (Column 8 lines 65-68)

Saida et al. is cited to show that for coating a strip of material coating zones can be arranged between the strip supply and take up devices, that the coating zones can include sputtering zones, which can include radio frequency sputtering with a magnetic field, that the chamber can have

slits (i.e. T-tubes) so sized and designed to allow the strip to pass there through, and to maintain a desired vacuum level within each zone.

However, Kuehnle, and Saida et al., taken together, do not teach a tape traversing the deposition chamber around an oval stationary cooling block.

Thus, applicants' process would not be obvious to one combining Kuehnle, and Saida et al. and applicants' respectfully request favorable reconsideration of this ground for rejection.

Claim 14 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Kuehnle in view of Saida et al. as applied to claims 9-13 and 15 above, and further in view of Mario et al, (U.S. Pat. 4,562,093).

Kuehnle and Saida are discussed above. They do not render applicants' process obvious because the combination of references lacks the two essential characteristics of applicants process; an elongated side of a cooling block allowing extended time in a coating zone and a stationary structure around which a tape moves.

Mario et al. is cited as teaching teach shutters to control range of deposition from the sputter target. (Column 9 lines 1-11. What Mario et al. shows is the use of a shutter in the production of a glass pane having a band filter of adjustable size along one or more margin edges.

However, Kuehnle, Saida et al., and Mario et al., taken together, still do not teach a tape traversing the deposition chamber around an oval stationary cooling block.

Thus, applicants' process would not be obvious to one combining Kuehnle, Saida et al., and Mario et al. and applicants' respectfully request favorable reconsideration of this ground for rejection.

Claims 18-24, 26, 27 and 29 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Kuehnle (U.S. Pat. 3,884,787) in view of Zhang et al. (U.S. Pat. 6,673,387) and Saida et al. (U.S. Pat. 4,763,601).

Kuehnle is discussed above and as indicated above is inapposite. It does not render applicants' process obvious because it lacks the two essential characteristics of applicants process, an elongated side of a cooling block allowing extended time in a coating zone and a stationary structure around which a tape moves.

The examiner indicates that further differences between Kuehnle and the present claims is that depositing a buffer layer is not discussed, utilizing a second deposition chamber is not discussed, utilizing a T-Tube of particular dimension is not discussed, residence time in the deposition chambers is not discussed, the substrate being metal is not discussed and where the sputtering in the second deposition chamber is carried out by RF magnetron sputtering.

The examiner states that Zhang et al. teaches the buffer layer deposition and the substrate being metal which allows for the deposition of a biaxially textured film.

The examiner further states that Saida et al. teaches multiple deposition chambers arranged after each other, utilizing a T-tube of particular dimensions, and sputtering with RF power and a magnetron and that the motivation for utilizing multiple deposition chambers arranged after each other, utilizing a T-tube of particular dimensions, and sputtering with RF power and a magnetron is that it allows for deposition of a coating layer having excellent properties.

However, Kuehnle, Zhang et al. and Saida et al., taken together, still do not teach a tape traversing the deposition chamber around an oval stationary cooling block

Therefore, if one of ordinary skill in the art at the time the invention was made modified Kuehnle by utilizing a buffer layer and a metal substrate as taught by Zhang et al, utilizing multiple deposition chambers arranged after each other, a T-tube of particular dimensions, and sputtering with RF power and a magnetron as taught by Saida et al. because it allows for deposition of a biaxially textured film and allows for deposition of a coating layer having excellent properties, that skilled person would not arrive at applicants process.

Thus, applicants' process would not be obvious to one combining Kuehnle, Zhang et al. and Saida et al. and applicants' respectfully request favorable reconsideration of this ground for rejection.

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Claim 25 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Kuehnle in view of Zhang et al, and Saida et al. as applied to claims 18-24, 26, 27, and 29 above, and further in view of Mario et al. (U.S. Pat. 4,562,093).

Kuehnle is discussed above and as indicated above is inapposite. It does not render applicants' process obvious because it lacks the two essential characteristics of applicants process, an elongated side of a cooling block allowing extended time in a coating zone and a stationary structure around which a tape moves.

Mario et al. is cited as teaching teach shutters to control range of deposition from the sputter target. (Column 9 lines 1-11. What Mario et al. shows is the use of a shutter in the production of a glass pane having a band filter of adjustable size along one or more margin edges.

However, Kuehnle, Zhang et al., Saida et al. and Mario et al., taken together, still do not teach a tape traversing the deposition chamber around an oval stationary cooling block

Thus, applicants' process would not be obvious to one combining Kuehnle, Zhang et al., Saida et al. and Mario et al. and applicants' respectfully request favorable reconsideration of this ground for rejection.

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Claims 28, 30 and 31 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Kuehnle in view of Zhang et al. and Saida et al. as applied to claims 18-24, 26, 27 and 29 above, and further in view of Kuehnle (U.S. Pat. 3,829,373).

These claims relate to the deposition of different coatings in different deposition zones.

Kuehnle is discussed above and as indicated above is inapposite. It does not render applicants' process obvious because it lacks the two essential characteristics of applicants process, an elongated side of a cooling block allowing extended time in a coating zone and a stationary structure around which a tape moves.

The present combination of references is cited by the examiner as showing motivation for utilizing different coating materials in different deposition zones for depositing different coatings.

However, Kuehnle, Zhang et al., Saida et al. and Kuehnle '373, taken together, still do not teach a tape traversing the deposition chamber around an oval stationary cooling block

Thus, applicants' process would not be obvious to one combining Kuehnle, Zhang et al., Saida et al. and Kuehnle '373, and applicants' respectfully request favorable reconsideration of this ground for rejection.

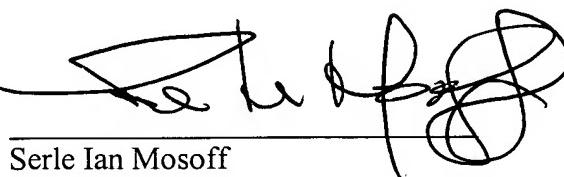
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**Conclusion**

Applicants submit that claims 1-32 are in condition for allowance and early notification thereof is solicited. Any fee due with this paper, not fully covered by an enclosed check, may be charged on Deposit Account 50-1290.

Respectfully submitted,

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